REMARKS

Claims 1-7, 15-19 and 23-32 are all the claims presently pending in the application. Claims 23-32 have been added to claim additional features of the invention.

Applicant gratefully acknowledges the Examiner's indication that claims 17-19 are objected to but would be allowed if rewritten in independent form. However, Applicant respectfully submits that all of the claims are allowable.

Claims 1-7, 15 and 16 stand rejected as unpatentable over Shakuda (U. S. Patent 5,814,533).

This rejection is respectfully traversed in view of the following discussion.

I. THE CLAIMED INVENTION

Applicant's invention (as recited in the exemplary embodiment of claim 1) is directed to a group III nitride compound semiconductor light-emitting device which includes a semiconductor laminate portion including a light-emitting layer, and a reflection surface disposed so as to be opposite to a side surface of the light-emitting layer.

Implortantly, the semiconductor laminate portion and the reflection surface are provided on the same chip, and a predetermined distance is provided between the semiconductor laminate portion and the reflection surface.

The Background second of the Application describes a device which includes a reflection surface which is not provided no the same chip (e.g., Application at Figure 4B). IN such devices, however, a large distance (e.g., 200-300 μm) separates the side surface of the light-emitting layer and the reflection surface. Therefore, the light component reflected is a light component within a very small angle (Application at page 22, lines 1-9).

In the claimed invention, on the other hand, the semiconductor laminate portion and the reflection surface are provided on the same chip, and a predetermined distance is provided between the semiconductor laminate portion and the reflection surface (Application at Figure 4A; page 14, lines 8-25). This allows the device to be easily fabricated and effectively utilize the light emitted from the side surface of the semiconductor laminate portion.

II. THE SHAKUDA REFERENCE

The Examiner alleges that Shakuda teaches the claimed invention of claims 1-7 and 15-16. Applicant would argue, however, that there are elements of the claimed invention which are neither taught nor suggested by Shakuda.

Shakuda discloses a light emitting device which includes stacked gallium nitride type compound semiconductor layers. The device is intended to have an enhanced luminous efficiency and life by suppressing the occurrence of crystal defects or dislocations due to mismatching of a lattice constant (Shakuda at col. 3, lines 21-28).

Applicant would argue, however, that Shakuda does not teach or suggest *"wherein said semiconductor laminate portion and said reflection surface are provided on the same chip, and* ***a predetermined distance is provided between said semiconductor laminate portion and said reflection surface***" as recited, for example, in claim 1.

As noted above, unlike conventional devices, in the claimed invention, a semiconductor laminate portion and a reflection surface are provided on the same chip, and a predetermined distance is provided between the semiconductor laminate portion and the reflection surface (Application at Figures 4A; page 14, lines 8-11). This allows the claimed invention to be easily fabricated and effectively utilize the light emitted from the side surface of the semiconductor laminate portion (Application at page 3, lines 4-9; page 4, line 4-page 5, line 4).

Clearly, these features are not taught or suggested by the Shakuda reference. Indeed, Applicant respectfully submits that the claimed invention is clearly novel and nonobvious over the cited reference.

Specifically, Applicant submits that Shakuda fails to teach or suggest at least, "*a predetermined distance is provided between said semiconductor laminate portion and said reflection surface*" as recited in present claims 1 and 30. In fact, Shakuda discloses an optical resonator in which **an etched surface of a laminated semiconductor is used as a smooth surface (e.g., a reflection surface).**

That is, even assuming (arguendo) that the smooth surfaces on the end faces of the active layer 5 in Shakuda could be considered a "reflection surface", the reflection surface is formed on the semiconductor layer 5. Thus, Shakuda does not teach or suggest any distance between the smooth surfaces and the semiconductor layer 5. Therefore, Shakuda clearly does

not teach or suggest a predetermined distance between said semiconductor laminate portion and said reflection surface as in the claimed invention.

In the Office Action, the Examiner asserts that Figure 5(e) (and col. 12, lines 30-35) of Shakuda disclose the above feature of "*a predetermined distance is provided between said semiconductor laminate portion and said reflection surface*". However, Applicant submits that such Examiner's assertion is clearly incorrect, since **both end surfaces of the active layer are formed as a part of the smooth surface (e.g., reflection surface).**

Further, Applicant respectfully submits that the "reflection surface" of the claimed invention is different from "smooth surface" of Shakuda. Indeed, Shakuda intends to emit the light from the side surface of the active layer **through the smooth surface**.

Further, as noted above, Shakuda is intended to improve a luminous characteristic by suppressing the occurrence of crystal defects or dislocations due to mismatching of a lattice constant. This is completely unrelated to the claimed invention which may improve luminous efficiency by forming a reflection surface in the same chip as the semiconductor laminate portion.

The Examiner attempts to equate the n side electrode 9 in Shakuda with the reflection surface of the claimed invention. This is clearly unreasonable.

Indeed, Shakuda teaches that the n-side electrode 9 is formed on the buffer layer 3 (Shakuda at col. 12, lines 18-21) which is at an elevation which is substantially below the active layer 5. Thus, it is clear that nowhere does Shakuda contemplate that the n-side electrode 9 would reflect light from the active layer 5.

Indeed, Applicant would point out that nowhere does Shakuda teach or suggest that the n-side electode 9 reflects a light emitted from the active layer. The Examiner surprisingly states that "Shakuda teaches wherein the reflection surface reflects light form (sic) the side surface of the semiconductor laminate portion into a direction of an optical axis of the light emitting device" relying on Shakuda at col. 12, lines 30-45. However, this is clearly not the case.

In fact, this passage in Shakuda merely describes how the end faces of the active layer 5 may form a resonator such that "the laser beam emitted from the active layer 5 advances parallel to the substrate surface, **and the optical axis matching of the laser beam and condenser lens is easy**" (Shakuda at col. 12, lines 39-40) (emphasis added). That is,

Shakuda teaches that a condenser lens is placed in the optical axis of light emitted from a side surface of the active layer 5, but clearly does not teach or suggest that a reflection surface is placed in such optical axis.

Further, Applicant would point out that a purpose of the reflection surface of the claimed invention is to reflect light which is emitted (e.g., transversely emitted) from the semiconductor laminate portion "in the direction of the center axis (optical axis)" (Application at page 3, lines 22-25). Shakuda, on the other hand, teaches that a semiconductor laser that "acts as a resonator provided with two opposite mirror end surfaces thus increasing the efficiency of light emission" (Shakuda at col. 9, lines 44-46).

That is, Shakuda intends for light to be emitted in a direction away from the side surface of the active layer. Therefore, there is no need for a reflecting surface to redirect the light. Indeed, such a reflection surface formed opposite to the side surface of the active layer would necessarily hinder the operation of the Shakuda device.

Therefore, Applicant would respectfully submit that Shakuda does not even teach or suggest a reflection surface disposed so as to be **opposite to a side surface** of said light-emitting layer. Certainly, Shakuda does not teach or suggest , a semiconductor laminate portion and a reflection surface which are provided on the same chip, and **a predetermined distance provided between the semiconductor laminate portion and the reflection surface**.

Therefore, Applicant would argue that there are elements of the claimed invention that are not taught or suggest by Shakuda. Therefore, the Examiner is respectfully requested to withdraw this rejection.

III. FORMAL MATTERS AND CONCLUSION

In view of the foregoing, Applicant submits that claims 1-7, 15-19 and 23-32, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Respectfully Submitted,

Date: 7/27/05

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CERTIFICATE OF FACSIMILE TRANSMISSION

I hereby certify that the foregoing Amendment was filed by facsimile with the United States Patent and Trademark Office, Examiner Laura Schillinger, Group Art Unit # 2813 at fax number (571) 273-8300 this 27th day of July, 2005.

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